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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,009	05/30/2006	Franz Roiner	298-311	6968

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EXAMINER	
MENDEZ, ZULMARIAM	
ART UNIT	**PAPER NUMBER**
1723	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/581,009	ROINER, FRANZ	
	Examiner	Art Unit	
	ZULMARIAM MENDEZ	1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 May 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *07/12/2010*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 16, 2011 has been entered.

Claim Interpretation – 35 U.S.C. 112, sixth paragraph

2. It is noted that the provisions of 35 USC 112, 6th paragraph have been invoked for the following limitation recited in claim 21.

a. Means for suctioning out the hydrogen and/or oxyhydrogen gases – paragraph 39 of the instant invention.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-6, 8-10, 12, 14-20, 22, 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sampson (EP 0 650 929).

With regard to claims 1-5, Sampson discloses an electrolytic process and apparatus for oxidizing or reducing species in dilute aqueous solutions (abstract) comprising the steps of arranging a liquid to be electrolytically treated, such as water (page 4, lines 13-21) between a cathode (14) and an anode (12), arranging an electrically non-conductive ion exchanger (16), the ion exchanger disposed within the liquid (page 3, lines 42-47) and directly between the cathode (14) and the anode (12) without any intervening membrane; (see figure 1; page 3, lines 48-55; thus, the ion exchanger is inherently made of a non-conducting material to avoid short circuit between the electrodes), adhering to an ion exchanger present in the liquid one or more gases, such as hydrogen and oxygen by an ionic circuit, (figure 1, page 3, lines 1-38 and 42-47; page 6, lines 41-50). Even though Sampson fails to explicitly teach wherein the gases generated during the electrolytic process escape upwardly into a space above the liquid water, one having ordinary skill in the art would have expected the hydrogen and oxygen gases generated from the electrolysis of water to escape/move

upwardly into a space above the water disposed between the electrodes (12 and 14) because the gases are less dense than liquid water.

With regard to claim 6, Sampson teaches wherein the ion exchanger is an acid ion exchanger (page 5, lines 22-27).

With regard to claim 8, Sampson discloses wherein the ion exchanger comprises a matrix, active groups and ions to be exchanged (page 6, lines 41-50).

With regard to claims 9 and 10, Sampson teaches wherein the ion exchanger contains catalytically acting substances (page 3, lines 42-55).

With regard to claim 12, Sampson discloses wherein the ion exchanger is kept in suspension in the liquid (page 4, lines 13-17; figure 2).

With regard to claim 14, Sampson teaches wherein the method is carried out in multiple stages (page 11, lines 15-38).

With regard to claim 15, Sampson discloses an electrolytic process and apparatus for oxidizing or reducing species in dilute aqueous solutions (abstract) comprising a container/reactor (20), a liquid, such as water within the container (page 4, lines 13-21), an electrically non-conductive ion exchanger (16), the ion exchanger disposed within the liquid (page 3, lines 42-47) to which one or more gases to be produced adheres by an ionic circuit (figure 1; page 3, lines 1-38 and 42-47; page 6, lines 41-50); and a positive electrode (22) and a negative electrode (24; see figure 2) in the container structured and arranged to be connected to a power source/external circuit shown in figure 2; and with the ion exchanger (16) directly between the cathode (14) and the anode (12) without any intervening membrane (see figure 1; page 3, lines

48-55; Thus, the ion exchanger is inherently made of a non-conducting material to avoid short circuit between the elctrodes). Even though Sampson fails to explicitly teach wherein the gases generated during the electrolytic process escape upwardly into a space above the liquid water, one having ordinary skill in the art would have expected the hydrogen and oxygen gases generated from the electrolysis of water to escape/move upwardly into a space above the water disposed between the electrodes (12 and 14) because the gases are less dense than liquid water.

With regard to claim 16, Sampson teaches wherein an electrode is tubular in design (page 5, lines 6-12).

With regard to claim 17 and 19, Sampson discloses wherein a filler material is present (page 5, lines 13-58) inside the tubular electrode in the liquid containing the gas to be produced and a substance to which the era gas to be produced adheres (figure 2 shows ion exchange material 26, 28 within the system).

With regard to claims 18 and 20, Sampson teaches wherein an acid is present in the filler material (page 5, lines 22-27).

With regard to claims 22 and 23, Sampson discloses wherein the ion exchanger comprises a matrix of cross-linked polymers (page 5, lines 22-36).

With regard to claim 25, Sampson teaches wherein H-ions are separated at the ion exchanger (page 7, lines 1-15).

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sampson, as discussed above, in view of Schirmann (EP 0 237 402).

With regard to claim 7, Sampson discloses an electrolytic process and apparatus for oxidizing or reducing species in dilute aqueous solutions (abstract) comprising the steps of arranging a liquid to be electrolytically treated, such as water (page 4, lines 13-21) between a cathode (14) and an anode (12), arranging an electrically non-conductive ion exchanger (16), the ion exchanger disposed within the liquid (page 3, lines 42-47) and directly between the cathode (14) and the anode (12) without any intervening membrane (see figure 1; page 3, lines 48-55; the ion exchanger is inherently made of a non-conducting material to avoid short circuit between the electrodes), adhering to the ion exchanger present in the liquid one or more gases, such as hydrogen and oxygen by an ionic circuit (figure 1; page 3, lines 1-38 and 42-47; page 6, lines 41-50), but fails to disclose wherein the ion exchanger is of gel-like form. However, Sampson teaches wherein the particle ion exchange material can be an oxidizing exchanger, i.e. a cation exchange resin, or a reducing exchanger, i.e. anion exchange resin (page 5, lines 23-25). It is well known in the art wherein ion exchange resins may be in provided in a gel-like form, as evidenced by Schimann.

Schimann discloses a process and apparatus for the production of gases wherein an aqueous medium is subjected to the action of an ion exchange resin selected from acidic gel type ion exchange resins which are stable in the aqueous medium at high temperatures (abstract). Therefore, one having ordinary skill in the art would have found it obvious to modify the ion exchange resin type, i.e. in the form of gel, as taught by Schimann, because they are stable in aqueous medium at high temperatures.

Even though the modified Sampson fails to explicitly teach wherein the gases generated during the electrolytic process escape upwardly into a space above the liquid water, one having ordinary skill in the art would have expected the hydrogen and oxygen gases generated from the electrolysis of water to escape/move upwardly into a space above the water disposed between the electrodes (12 and 14) because the gases are less dense than liquid water.

7. Claims 11, 13 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sampson, as discussed above, in view of Tokuyama (JP 59092028).

With regard to claims 11 and 13, Sampson discloses all of the limitations, as discussed above but fails to teach wherein the ion exchanger is kept in motion by a fluidized bed and is supplied continuously.

Tokuyama teaches a method and apparatus for the treatment of a liquid in which an ion exchange resin is immersed in said liquid to be treated is supplied continuously and kept in motion by a fluidized bed (see arrows indicating movement of the liquid to be treated, which flow into the tank containing the ion exchange resins and would also cause motion of the resins - in figure 1) in order to enhance contact efficiency of a liquid to be treated (abstract). Therefore, one having ordinary skill in the art at the time of the invention would have found it obvious to modify the method of Sampson by imparting motion to the ion exchanger resins, as taught by Tokuyama, in order to enhance contact efficiency of a liquid to be treated. The limitation "to improve gas production and electron flow" has not been given patentable weight because it has been held by the

courts that the manner of operating a device does not differentiate an apparatus claim from the prior art. A recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus if the prior art apparatus teaches all the structure limitations of the claim. See MPEP 2114. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. >In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997).

8. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sampson, as applied to claim 15 above, in view of Tseng et al. (US Patent Application Publication no. 2004/0045836).

With regard to claim 21, Sampson discloses all the structural limitations discussed above, but fails to teach means for suctioning out the gases from a space above the upper level of the liquid within the container and constituting said accumulating means.

Tseng teaches an electrolysis system wherein in order to recover the gases generated and accumulated above the liquid level of the electrolytic vessel (40; figure 7), a vacuum pump (44) may be connected to the cell at a top opening (45) to exert a negative pressure inside the vessel (40; paragraph 39). Therefore, it would have been obvious to one having ordinary skill in the art to incorporate a vacuum line at the top of the electrolytic cell of Sampson, as taught by Tseng, in order to effectively recover the gases generated during the process.

Response to Arguments

9. Applicant's arguments filed on April 5, 2010 have been fully considered but they are not persuasive. The applicant argues the following:

a. The instant invention is directed for the production of hydrogen and/or oxyhydrogen gases which are released and transported away from the generating medium (e.g. water) for recovery. Sampson rather relates to producing certain specific halous acids in situ in dilute solutions by selective oxidation and thus, provides no suggestion of producing hydrogen and or oxyhydrogen.

In response, the Examiner does not find this argument persuasive because Sampson discloses an electrolytic process and apparatus wherein oxygen and hydrogen are produced as a result of water electrolysis (page 7, lines 1-16). Even though Sampson fails to explicitly teach wherein the gases generated during the electrolytic process escape upwardly into a space above the liquid water, one having ordinary skill in the art would have expected the hydrogen and oxygen gases generated from the electrolysis of water to escape/move upwardly into a space above the water disposed between the electrodes (12 and 14) because the gases are less dense than liquid water. In addition, it has been held by the courts that the manner of operating a device does not differentiate an apparatus claim from the prior art. A recitation with

respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus if the prior art apparatus teaches all the structure limitations of the claim. See MPEP 2114. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. >In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997).

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ZULMARIAM MENDEZ whose telephone number is (571)272-9805. The examiner can normally be reached on Monday-Friday from 9am to 5pm.

11. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Harry D Wilkins, III/
Primary Examiner, Art Unit 1723

/Z. M./
Examiner, Art Unit 1723